

Fan-Yin Cheng, Ph.D.

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<https://fanyincheng.github.io/>

EDUCATION

Postdoctoral Fellow, Speech, Language, and Hearing Sciences, University of Texas at Austin. Present

December 2022

Ph.D., Speech, Language, and Hearing Sciences, University of Texas at Austin.

- Certification: Certificate of Clinical Competence in the field of Audiology (CCC-A)

Master of Arts, Speech, Language, and Hearing Sciences, University of Colorado at Boulder. May 2016

Bachelor of Arts, Foreign Languages and Literature, National Cheng Kung University, Tainan, Taiwan. June 2014

- Major: Linguistics
- Minor: Chinese Teaching to Second Language Learners

SKILLS

- Human Electrophysiology
- Statistics
- MATLAB (2+ years)
- Acoustic analytical software (Praat, Audacity)
- Audiological clinical training (1500+ clinical hours)
- Neuromodulation systems (Geodesic, Curry, IHS, EEGLAB)

RESEARCH EXPERIENCE

Postdoctoral Fellow in Auditory Neuroscience

January 2023 – Present

University of Texas at Austin, Dept. of Speech, Languages, and Hearing Sciences

Laboratory of Dr. Spencer Smith (TexAN Lab)

Graduate Researcher in Auditory Neuroscience

August 2017 – December 2022

University of Texas at Austin, Dept. of Speech, Languages, and Hearing Sciences

Laboratory of Dr. Craig Champlin (Hearing Function Lab)

- Auditory processing in responses to successive sounds: Recorded auditory brainstem responses (ABRs) to complex speech sounds to evaluate listeners' temporal acuity at the subcortical level. The wave V latency and amplitude of ABRs reflect the ability of the listener's temporal acuity, which is related to speech processing. Therefore, this project's findings suggest that the temporal resolution measurements are worthy of exploring for the clinical population.

Laboratory of Dr. Spencer Smith (TexAN Lab)

- Cognitive effects in subcortical neural responses: Recorded the frequency following responses (FFRs) to sine-wave speech to identify the modulation of the efferent auditory nervous system on subcortical auditory function. We found that the auditory efferent system may modulate bottom-up processing when perceiving shifts between non-speech and speech.
- Statistical methods for neural responses detection: Compared statistically-based automated speech FFR (sFFRs) detection (F-test vs. Hotelling's T^2 test) of neural responses to speech recorded in quiet and noise conditions.
- Neural dynamics of spatial listening: Recorded the cortical auditory evoked potentials (CAEP) with 64-channel EEG when participants listened to audio cues and immediately identified the target speech from multiple locations in space (-90°, -45°, 0°, +45°, +90°). The project further tests the attention effect by comparing these results with a group of participants who were not participating in the identification task while listening to the cues and stimuli.

Laboratory of Dr. Rosemary Lester-Smith (UT Voice Lab)

- Digital biomarker for cognitive impairment: Leveraged acoustic, speech, and language biomarkers to identify the population with mild cognitive impairment (MCI). Recorded test and spontaneous speech samples during clinical appointments. The results will provide a new direction in the early detection and prediction of cognitive impairment.

Laboratory of Dr. Julia Campbell (CSP Lab)

- Noise effects in auditory central inhibition: Recorded 128-channel EEG while participants listened to vowels with varying noise backgrounds to compare the effects of informational masking and energetic masking. The results indicate central inhibition related to speech perception decreased when listeners were exposed to noises.

Graduate Researcher in Semantics and Bilingualism

February 2015 – July 2016

University of Colorado at Boulder, Dept. of Speech, Language, and Hearing Sciences

Laboratory of Dr. Pui Fong Kan: Examined the priming effects of semantic cues in speech processing of ESL

Laboratory of Dr. Bhuvana Narasimhan Examined the multimodal cues (including visual, auditory, and linguistic cues) in children's language learning.

Undergraduate Research Assistant in Phonetics, Phonology and Bilingualism

July 2011 – June 2014

National Cheng Kung University, Tainan, Taiwan, Dept. of Foreign Languages and Literature

Laboratory of Dr. Li-Mei Chen: (1) Transcribed the phonetic cues of Mandarin-Taiwanese bilinguals and children with cerebral palsy. (2) Developing acoustic analysis software LIPP and TOCS+ for mandarin speakers.

SELECTED RESEARCH GRANTS / FELLOWSHIPS

UT-Austin, Graduate Dissertation Writing Fellowship, Awarded \$7500	January 2022
UT-Austin, Graduate School Summer Fellowship, Awarded \$7500	May 2021
UT-Austin, Roderick P. Hart Student Achievement Award, Awarded \$1000	May 2021
UT-Austin, Graduate School Fellowship, Awarded \$5000	September 2020, 2019, 2018
UT-Austin, Professional Development Award, Awarded \$500	December 2019
UT-Austin, Graduate School Meritorious Award, Awarded \$20000	September 2017
UT-Austin, Provost Fellowship, Awarded \$5000	September 2017
CU-Boulder, Department Research Funding, Funded \$ 700	November 2016, 2015
CU-Boulder, Department Fellowship, Awarded \$6000	May 2016

SELECTED PUBLICATIONS

- [1] **Cheng, F. Y.,** & Smith, S. (2022). Objective Detection of the Speech Frequency Following Response (sFFR): A Comparison of Two Methods. *Audiology Research*, 12(1), 89-94.
- [2] **Cheng, F.-Y.,** Xu, C., Gold, L., & Smith, S. (2021). Rapid enhancement of subcortical neural responses to sine-wave speech. *Frontiers in Neuroscience*, 15.
- [3] **Cheng, F.-Y.,** Campbell, J., & Liu, C. (submitted to Plos One). Auditory sensory gating: Effects of noise.
- [4] **Cheng, F.-Y.,** & Champlin, C. A. (2021). Auditory brainstem responses to successive sounds: Effects of gap duration and depth. *Audiology Research*, 11(1), 38-46.
- [5] Narasimhan, B., **Cheng, F.-Y.,** Davidson, P., Kan, P. F., & Wagner, M. (2017a). The influence of visual, auditory, and linguistic cues on children's novel verb generalization. In G. Sengupta, S. Sircar, G. Raman, & R. Balusu (Eds.), *Perspectives on the architecture and acquisition of syntax* (pp. 217-233). Springer, Singapore.

SELECTED PRESENTATIONS

- [1] **Cheng, F.-Y.,** Smith, S., & Champlin, C.A. (Feb. 2023). Effects of preceding vowels on physiological responses to successive consonants. In Association for Research in Otolaryngology 46th annual midwinter meeting 2023. Orlando, FL.
- [2] **Cheng, F.-Y.,** Xu, C., Gold, L., & Smith, S. (Feb. 2022). Auditory perceptual shifts from non-speech to speech enhance subcortical auditory processing. In Association for Research in Otolaryngology 45th annual midwinter meeting 2022. Virtual Meeting.
- [3] **Cheng, F.-Y.,** Xu, C., Ornelas, M.-E., Goodall, H., Gold, L., & Smith, S. (Nov. 2021). Attention effects on cortical neural processing in spatial listening. *The Journal of the Acoustical Society of America*, 150(4), A143-A143.
- [4] Xu, C., **Cheng, F.-Y.,** Medina, S., & Smith, S. (Nov. 2021). Acoustic bandwidth effects on envelope following responses to simulated bimodal hearing. *The Journal of the Acoustical Society of America*, 150(4), A64-A64.
- [5] **Cheng, F.-Y.,** Campbell, J., & Liu, C. (Mar. 2020). Auditory sensory gating: Effects of noise. In Cognitive neuroscience society 2020. Virtual Meeting.
- [6] **Cheng, F.-Y.,** So, W., & Champlin, C. A. (Dec. 2019). Auditory brainstem responses to successive sounds: Effects of gap duration and depth. *The Journal of the Acoustical Society of America*, 146(4), 2831-2831.
- [7] So, W., **Cheng, F.-Y.,** & Champlin, C. A. (Dec. 2019). Effects of interaural phase on the frequency following response. *The Journal of the Acoustical Society of America*, 146(4), 2832-2832.
- [8] Narasimhan, B., **Cheng, F.-Y.,** Davidson, P., Kan, P. F., & Wagner, M. (2017b). Multimodal cues in children's verb learning. In Linguistic society of America annual winter meeting 2017. Austin, TX.
- [9] **Cheng, F.-Y.,** & Kan, P. F. (2016). Crosslinguistic semantic priming effects in English-language learners. In Annual conference of the American speech, language, and hearing association. Philadelphia, PA.

TEACHING EXPERIENCE

Anatomy & Physiology of the Speech and Hearing Mechanisms Lab (Fall, 2020-2021; Spring, 2021), **Assistant Instructor**
Anatomy & Physiology of the Speech and Hearing Mechanisms (Fall, 2018-2021; Spring, 2019-2021), **Teaching Associate**
Principle of Aural Rehabilitation (Spring, 2019), **Teaching Assistant**

CLINICAL EXPERIENCE

Austin Ear, Nose & Throat (ENT) Clinic (Cochlear Implants)-Dr. James Kemper's Office, TX, Graduate Clinician	June 2022 – August 2022 (124 hours)
Austin Regional Clinic-Round Rock, TX, Graduate Clinician	January 2022 – May 2022 (190 hours)
Seton Children's Ear, Nose & Throat (ENT) Center, TX, Graduate Clinician	August 2021 – December 2021 (170 hours)
Dell Children's Medical Center (Ascension) , TX, Graduate Clinician	June 2021 – August 2021 (158 hours)
Austin ENT Clinic- Central , TX, Graduate Clinician	January 2021 - May 2021 (263 hours)
Austin Regional Clinic-Round Rock, TX, Graduate Clinician	August 2020 - December 2020 (217.7 hours)
Austin ENT Clinic-Dr. James Kemper's Office, TX, Graduate Clinician	February 2020 - March 2020 (47.5 hours)
University of Texas Speech and Hearing Center, TX, Graduate Clinician	January 2019 - August 2020 (334.8 hours)